WHAT IS CLAIMED IS:

1. A multi-piece mold for shaping a cylindrical glass tube comprising:

each piece of the multi-pieces of the mold having an inner surface designed to be applied along a selected section of the cylindrical tube for shaping the selected section of the cylindrical tube; and

at least one piece of the multi-pieces of the mold including a heating source, formed within the one piece of the multi-pieces of the mold, for heating the tube and rendering it malleable, whereby the multi-pieces of the mold when applied to the tube can shape the tube in conformance to the mold.

2. A multi-piece mold as claimed in Claim 1 wherein the heating source includes heating gas distribution channels, formed within the one piece of said multi-piece mold, with said distribution channels terminating along an inner surface of said one piece of said multi-piece mold for providing jets of gas along the inner surface.

3. A multi-piece mold as claimed in Claim 2, further including means for coupling the heating gas distribution channels to a source of gas which, when supplying gas, enables the one piece of the multi-pieces of the mold to function as a high intensity heat source for placing the selected section of the tube in a malleable state.

4. A multi-piece mold as claimed in Claim 2, wherein said cylindrical glass tube is hollow; wherein the multi-piece mold includes two side pieces of the mold designed to be applied around and along the selected section of the tube, wherein each one of said two side pieces of the mold is an elongated side piece having an inner surface designed to be applied around and along a selected end section of the cylindrical tube for shaping the selected end section of the cylindrical tube over a first distance from the end of the tube; and

wherein a third piece of the mold includes an end cap with a cylindrical stub for insertion into the opening of the tube, at its selected end region, for shaping the rim and controlling the inner diameter of the cylindrical tube along the first distance from the end of the tube.

5. A multi-piece mold as claimed in Claim 4, wherein the terminations of the distribution channels occur at several points along the inner surface of one side piece of the two side pieces of the mold.

6. A multi-piece mold as claimed in Claim 4, wherein at least one piece of the two side pieces of the mold includes ventilation channels extending between its inner and outer surfaces to enable air and gases trapped between the outer walls of the tube and the inner surfaces of the mold to escape.

7. A multi-piece mold as claimed in Claim 4, wherein the two side pieces, when joined together, define an arcuately shaped space for encircling and tapering a selected end region of the tube, for causing the selected end region to assume a conic shape, with the two side pieces still leaving an opening aligned with the tube opening, with the end cap cylindrical stub passing through the opening between the two side pieces for insertion into the tube opening and being shaped such that, when inserted into the opening of the tube, it controls the inner diameter of the tube.

8. A multi-piece mold as claimed in Claim 7, wherein the cylindrical stub has a first section having first diameter (d1) which extends from an inner surface of the end cap and which is inserted a first distance from the end of the tube inwards, and having a second section having a second diameter (d2) which extends from the first section, beyond the first distance, with the first diameter being greater than the second diameter.

9. A multi-piece mold as claimed in claim 8, wherein said hollow cylindrical tube is intended to be used as an exhaust tube to be joined to a cylindrical hollow starter tube.

10. A multi-piece mold as claimed in Claim 9 wherein the two side pieces and the stub of the end cap shape the opening of the exhaust tube to enable the starter tube to fit snuggly within the exhaust tube opening.

11. A multi-piece mold as claimed in Claim 10, wherein the diameter of the stub is such that the inner surfaces of the exhaust and starter tubes are flush with each other.

12. A multi-piece mold as claimed in Claim 2, wherein the pieces of the mold are formed of material capable of operating at temperatures in excess of the melting point of glass and without contaminating the glass.

13. A multi piece mold for shaping a glass tube comprising:

first and second pieces of the mold having inner surfaces designed to be applied around and along a selected section of the tube for shaping the selected section of the tube; and

the first piece including heat distribution channels, formed within the first piece, for projecting heat along the inner surface of the first piece of the mold for enabling the first piece of the mold to heat the tube to be shaped by the multi-piece mold.

14. A multi-piece mold as claimed in Claim 13, wherein the glass tube is a hollow cylindrical glass tube; and wherein the heat distribution

channels include channels through which gas may be distributed with gas jets emanating along the inner surface of the first piece, for enabling the first piece of the mold to function as a heat source and to mold the tube.

15. A multi-piece mold as claimed in Claim 14, wherein each one of said first and second pieces of the mold is an elongated side piece having an inner surface designed to be applied around and along a selected end section of the cylindrical tube for shaping the selected end section of the cylindrical tube over a first distance from the end of the tube; and

wherein the mold includes an end cap including a cylindrical stub for insertion into the opening of the tube, at its selected end region, for shaping the rim and controlling the inner diameter of the cylindrical tube along the first distance from the end of the tube.

16. A multi-piece mold as claimed in Claim 14, wherein the distribution channels within the first piece is coupled to tubing coupling the distribution channels to a gas fitting to which a source of gas may be attached.

17. A multi-piece mold as claimed in Claim 14, wherein ejection of gas occurs at several points along the inner surface of said first piece.

18. A multi-piece mold as claimed in Claim 14, wherein at least one of the first and second side pieces includes ventilation channels extending between its inner and outer surfaces to enable air and gases trapped between the outer walls of the tube and the inner surfaces of the mold to escape.

19. A multi-piece mold as claimed in Claim 15 wherein the inner surfaces of the first and second elongated side pieces, when joined together, define an arcuately shaped space for encircling and tapering the end region of the tube, at and near its selected end region, for causing the end region to assume a conic shape, while still leaving an opening between the two elongated side pieces aligned with the tube opening for enabling the end cap stub to be inserted into the opening of the tube and to control the inner diameter of the tube.

20. A multi-piece mold as claimed in Claim 15, wherein said hollow cylindrical glass tube is intended to be used as an exhaust tube to be joined to a cylindrical hollow starter tube.

21. A multi-piece mold as claimed in Claim 20 wherein the two elongated side pieces and the stub of the end cap shape the opening of the exhaust tube to enable the starter tube to fit snuggly within the exhaust tube.

22. A multi-piece mold as claimed in Claim 21, wherein the diameter of the stub is varied such that the inner surfaces of the exhaust and starter tubes are flush with each other.

23. A multi-piece mold as claimed in Claim 14, wherein the pieces of the mold are formed of material capable of operating at temperatures in excess of the melting point of glass and without contaminating the glass.

24. A multi-piece mold for shaping a tube comprising:

two elongated sleeve-like pieces which, when joined, encircle a portion of the tube for shaping the tube; and

an end plug piece including a cylindrical stub for insertion into the opening of the tube for controlling the inner diameter of the tube; and

wherein at least one of said pieces of the mold includes a heat source, formed within the one piece, for heating the tube to render it malleable.

25. A multi-piece mold as claimed in claim 24 wherein the heat source includes heating gas distribution channels, formed within the one piece of said multi-piece mold, with said distribution channels formed to eject gas along an inner surface of said one piece of said multi-piece mold.

26. A multi-piece mold as claimed in Claim 24 wherein said tube is an exhaust tube shaped to mate with a starter tube, such that the exhaust and starter tubes can be joined easily at their mating ends.

27. Apparatus for shaping a glass tube comprising:

a mold having multiple pieces, with each piece having an inner surface for shaping the tube, at least one piece of the pieces of the mold including a heat source emanating from its inner surface, the heat distribution source being formed within that piece, for heating the tube until it is rendered malleable;

means for selectively applying the one piece of the mold to a tube; and

means for selectively applying the rest of the mold pieces to the tube to shape the tube.

28. Apparatus as claimed in Claim 27 wherein the heat source includes heating gas distribution channels, formed within the one piece of said multi-piece mold, with said distribution channels formed to eject gas along an inner surface of said one piece of said multi-piece mold.

29. Apparatus as claimed in Claim 26 wherein the glass tube is used in the manufacture of optic fibers.

30. A mold as claimed in Claim 28 wherein the pieces of the mold are formed of material capable of operating at temperatures in excess of the melting point of glass and without contaminating the glass.

31. Apparatus for shaping a selected portion of a glass tube comprising:

a support means for holding the tube;

a multi-piece mold having one piece in which is formed a heat distribution source; and

an actuatable mechanical holding means for holding the multi piece mold, including means for holding the one piece in which is formed a heat distribution source, in proximity to the selected portion of the tube for heating the selected tube portion to render it malleable, and for selectively applying the mold pieces to the tube for shaping the selected portion of the tube.

32. An apparatus as claimed in Claim 31, wherein the apparatus includes temperature sensing means for sensing the temperature of the selected portion of the tube; and wherein the apparatus includes means responsive to a signal from the temperature sensing means for applying the mold pieces to the selected portion of the tube.

33. An apparatus as claimed in Claim 31, wherein the glass tube is a hollow, cylindrical tube and wherein said multi-piece mold includes two

side pieces for imparting an oblate cone-like shape to a selected end portion of the tube while leaving an opening for accessing the opening of the tube at its selected end, and wherein said mold includes and end plug which is inserted in the opening of the tube for controlling the inner diameter of the tube at its end surface.

34. An apparatus as claimed in Claim 33, wherein positive air pressure is supplied to the tube at its unselected end, while the selected end of the tube is being heated and molded, to cause the tube to conform to the shape being imparted by the mold.

35. An apparatus as claimed in Claim 31, wherein the support means includes means for rotating the tube at a controllable rate.

36. An apparatus as claimed in Claim 31 wherein the apparatus includes a temperature sensor for sensing the temperature of a selected portion of the tube for producing an actuating signal coupled to the actuatable mechanical holding means when the temperature of the selected end portion is such that the tube is malleable.

37. The apparatus as claimed in Claim 36 wherein the heat distribution source functions as a torch and wherein said temperature sensor functions to control the intensity of the torch.

38. A method for shaping a selected end of a glass tube comprising the steps of:

positioning the tube within a support means;

heating the selected end of the tube with one piece of a multi-piece mold, where the one piece contains a heat source, until the selected end of the tube becomes malleable; and

applying the multi-piece mold to the selected end of the tube when the selected end becomes malleable for shaping the selected end the tube.

39. A method as claimed in Claim 38 wherein the heating of the selected end of the tube is controlled by a temperature sensor to control application of heat via one piece of the mold.

40. A method as claimed in Claim 39 further including the step of supplying a signal from a temperature sensor to a microcontroller coupled to the heat source to control the amount of heat (gas) applied to the tube.

41. A method as claimed in claim 39 further including the step of supplying a signal from the temperature sensor to a microcontroller to

control application of heat to the tube and the application of the multi-piece mold to the tube.

42. A method as claimed in Claim 38 further including the step of applying positive air pressure to the unselected end of the glass tube.

43. A method as claimed in Claim 38 further including the step of rotating the tube in a controllable manner, while the tube is being heated.

44. A method as claimed in Claim 38 further including the step of biasing the heated tube end to conform to the multi-piece mold; and removing the mold from the conformed tube after a predetermined time period.

45. A method for shaping a selected end of a hollow cylindrical tube, comprising the steps of:

positioning the tube within a support means;

placing a mold containing a heat source in close proximity to the selected end of the tube until the selected end segment of the tube becomes malleable; and

applying the mold to the selected end of the tube when the tube becomes malleable for shaping the tube to conform to the mold.

46. A method as claimed in claim 45 including the step of sensing the condition of the tube section being heated.

47. A method as claimed in Claim 46 including a control system responsive to sensing the condition of the tube section being heated for then applying all the mold pieces to the tube.